

WHAT IS CLAIMED IS:

1. A power amplifier comprising:

a first amplifier element configured to amplify a first input signal of a first frequency, the first amplifier element including a first input terminal which receives the first input signal, and a first output terminal which outputs a first output signal obtained by amplifying the first input signal;

a second amplifier element configured to amplify a second input signal of a second frequency, the second amplifier element including a second input terminal which receives the second input signal, and a second output terminal which outputs a signal obtained by amplifying the second input signal;

a power supply input terminal connected to a direct-current power supply;

a common power supply path including an end connected to the power supply input terminal, and another end;

a first individual power supply path including an end connected to the another end of the common power supply path, and another end connected to the first output terminal, the first individual power supply path having a first impedance; and

a second individual power supply path including an end connected to the another end of the common power supply path, and another end connected to the second

output terminal, the second individual power supply path having a second impedance.

2. The power amplifier according to claim 1, further comprising a multilayer wiring board comprising a first layer provided with the first amplifier element and the second amplifier element, and a second layer provided with the common power supply path and the first individual power supply path and the second individual power supply path.

3. The power amplifier according to claim 1, further comprising a multilayer wiring board comprising a first layer and a second layer, wherein the first amplifier element and the second amplifier element are provided on the first layer, and the common power supply path, the first individual power supply path and the second individual power supply paths are provided on the first layer and the second layer.

4. The power amplifier according to claim 1, further comprising a multilayer wiring board comprising a first layer and a second layer, wherein the first amplifier element, the second amplifier element, the first individual power supply path and the second individual power supply path are provided on the first layer, and the common power supply path is provided on the second layer.

5. The power amplifier according to claim 1, wherein the first individual power supply path and the

second individual power supply path have different lengths.

6. The power amplifier according to claim 1,
wherein the common power supply path, the first
5 individual power supply path and the second individual
power supply path each comprising an inductance
element.

7. A power amplifier comprising:

a first amplifier element configured to amplify a
10 first input signal of a first frequency, the first
amplifier element including a first input terminal
which receives the first input signal, and a first
output terminal which outputs a first output signal
obtained by amplifying the first input signal;

15 a second amplifier element configured to amplify a
second input signal of a second frequency, the second
amplifier element including a second input terminal
which receives the second input signal, and a second
output terminal which outputs a signal obtained by
20 amplifying the second input signal;

a power supply input terminal connected to a
direct-current power supply;

a common power supply path including an end
connected to the power supply input terminal, and
25 another end;

a first individual power supply path including an
end connected to the another end of the common power

supply path, and another end connected to the first output terminal, the first individual power supply path having a first impedance;

5 a second individual power supply path including an end connected to the another end of the common power supply path, and another end connected to the second output terminal, the second individual power supply path having a second impedance;

10 a first output matching circuit connected to the first output terminal of the first amplifier element; and

a second output matching circuit connected to the second output terminal of the second amplifier element.

15 8. The power amplifier according to claim 7, wherein:

the first amplifier element and the second amplifier element are controlled exclusively to operate the first amplifier element and the second amplifier element; and

20 the common power supply path, the first individual power supply path and the second individual power supply path, the first output matching circuit and second output matching circuit have respective impedances,

25 each of the respective impedances being set to a value so that a real part of a synthesis impedance viewed from one selected from the first amplifier

element and second amplifier element that is in operation, to a corresponding one selected from the first and second individual power supply paths, is greater than a real part of a corresponding one
5 selected from the first output matching circuit and second output matching circuit.

9. The power amplifier according to claim 7, wherein each of the first output matching circuit and the second output matching circuit has a conjugate
10 impedance with respect to an impedance of a corresponding one in operation of the first amplifier element and the second amplifier element.

10. The power amplifier according to claim 7, further comprising a multilayer wiring board including
15 a first layer provided with the first amplifier element and the second amplifier element, and a second layer provided with the common power supply path and the first individual power supply path and the second individual power supply path.

20 11. The power amplifier according to claim 7, further comprising a multilayer wiring board including first layer and second layer, wherein the first amplifier element and the second amplifier element are provided on the first layer, and the common power
25 supply path and the first individual power supply path and the second individual power supply path are provided on the first layer and the second layer.

12. The power amplifier according to claim 7,
further comprising a multilayer wiring board including
first layer and second layer, wherein the first
amplifier element and the second amplifier element and
5 the first individual power supply path and the second
individual power supply path are provided on the first
layer, and the common power supply path is provided on
the second layer.

13. The power amplifier according to claim 7,
10 wherein the first individual power supply path and the
second individual power supply path have different
lengths.

14. The power amplifier according to claim 7,
wherein the common power supply path, the first
15 individual power supply path and the second individual
power supply path each include an inductance element.

15. A radio communication device which performs
data reception and transmission using one frequency
band selected from a plurality of frequency bands,
20 comprising:

a transmission signal generator which generates a
transmission signal of the one frequency band ; and
the power amplifier according to claim 1, the
power amplifier receiving the transmission signal as an
25 input signal.

16. A radio communication device which performs
data reception and transmission using one frequency

band selected from a plurality of frequency bands,
comprising:

a transmission signal generator which generates a
transmission signal of the one frequency band; and

5 the power amplifier according to claim 7, the
power amplifier receiving the transmission signal as an
input signal.